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CLAIMS

1.   In a system for processing video data comprising
groups of interleaved trellis encoded data packets, apparatus
(1) for providing trellis decoded data, comprising:

5   means (2) for generating decision data (28,29) associated
with trellis state transitions in response to said video data,
comprising means for estimating a value for a second data bit
from a pair of first and second data bits;

a traceback network (33) responsive to said decision data
10   for identifying a sequence of antecedent trellis states, as
determined by a state transition trellis, wherein said
antecedent states are identified for a sequence of collocated
interleaved packets; and

means (50) responsive to said identified sequence of
15   antecedent trellis states, for providing said trellis decoded
data (51).

2.   A system according to claim 1, further including means (3) for calculating for a current trellis branch a value (14) for the first data bit and an estimated value (15) for the second data bit.

5   3.   A system according to claim 3, further including means (8) for concurrently selecting the appropriate first data bit (26) and second data bit (27) into a trellis state in response to the selection of the minimum path metric into the trellis state.

10   4.   A system according to claim 4, further including means (23) for concurrently selecting the appropriate first data bit (6) and second data bit (31) among all trellis states in response to the selection of the minimum path metric among all trellis states.

15   5.   A system according to claim 4, wherein the traceback network (33) further comprises means (45) for storing the value of first data bit (6) and the estimated value of the second data bit (31).

6.   A system according to claim 5, further including
20   means (41) for providing a plurality of trellis decoded data sequences and means (52) for identifying one of the plurality of trellis decoded data sequences with a pointer updated by identifying antecedent trellis states with said decision data.

7.   A system according to claim 6, wherein the pointer
25   selects one of the first data bits (6) and one of the second data bits (31) as correctly decoded data bits.

8. In a system for processing video data comprising groups of interleaved trellis encoded data packets formed from data pairs containing a first data bit and a second data bit, a method of providing trellis decoded data comprising the steps

5   of:

calculating a value for the first data bit;

estimating a value for the second data bit;

generating decision data associated with trellis state transitions in response to said video data;

10   identifying a sequence of antecedent trellis states in accordance with a state transition trellis, wherein said antecedent states are identified for a sequence of collocated interleaved packets in response to said decision data; and

providing said trellis decoded data in response to said

15   identified sequence of antecedent trellis states.

9. A system according to claim 8, further comprising the step of calculating for a current trellis branch the value of the first data bit and the estimated value of the second data bit.

20   10. A system according to claim 9, further comprising the step of concurrently selecting the appropriate first data bit and second data bit into a trellis state in response to the selection of the minimum path metric into the trellis state.

11. A system according to claim 10, further comprising the

25   step of concurrently selecting the appropriate first data bit and second data bit among all trellis states in response to the selection of the minimum path metric among all trellis states.

12. A system according to claim 8, further comprising the steps of:

providing a plurality of trellis decoded data sequences

and;

identifying one of the plurality of trellis decoded data
sequences with a pointer updated by identifying antecedent

5   trellis states with said decision data.

13. A system according to claim 12, further comprising the
step of updating the pointer once for each epoch.

14. A trellis decoder (1) having a plurality of trellis
branches and trellis states for decoding encoded symbols having

10   at least a first data bit and a second data bit, the trellis
decoder (1) comprising a branch metric computer (2), the branch
metric computer (2) being adapted to compute a metric value
between the encoded symbol received by the trellis decoder and
the encoded symbol associated with the trellis branches, the

15   branch metric computer (2) generating a plurality of output
bits (14, 15) associated with a current trellis branch leading
from a trellis state, the output bits (14, 15) identifying
characteristics of the first and second data bits.

15. The trellis decoder of claim 14, wherein the branch

20   metric computer (2) further comprises a plurality of computer
subunits (3), each computer subunit (3) being associated with a
particular trellis state, each computer subunit (3) generating
a plurality of signals (12, 13, 14, 15, 16, 17) identifying an
estimated characteristic of each trellis branch leaving the

25   particular trellis state associated with the computer subunit.

16. The trellis decoder of claim 15 further comprising an
add-compare-select unit (8), the add-compare-select unit
receiving the branch metric computer output bits (12, 13, 14,
15, 16, 17) identifying characteristics of the first and second

data bits, the add-compare-select unit (8) choosing the appropriate first (6) and second (31) bits based on the selection of the minimum path metric.

17. The trellis decoder of claim 16 wherein add-compare-
5   select unit (8) further comprises a plurality of add-compare-
select subunits (23), each add-compare-select subunit being associated with a particular trellis state, each add-compare-
select subunit (23) choosing the appropriate first (6) and second (31) bits corresponding to each state based on the
10   selection of the minimum path metric into the state.

18. The trellis decoder of claim 17 further comprising a traceback unit (33), the traceback unit receiving the estimate (31) of the second data bit from each of the add-compare-select subunits (23) and selecting one of the estimated second data
15   bits (31) as a correctly decoded data bit.

19. The trellis decoder of claim 18 wherein the traceback unit (33) receives the value (6) of the first data bit from each of the add-compare-select subunits (23) and selects one of the first data bits (6) as a correctly decoded data bit.
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